REMARKS

1. Specification Amendments.

Applicant has amended title to conform with USPTO practices. No new matter has been added by this amendment.

2. Claim Amendments.

Claims 5 and 9 have been amended overcome the Examiner's objection under 35 USC 112. New Claim 14 has been added. No new matter has been added any of these amendments or additions.

3. 35 USC 102 Rejection.

Claims 1-3, 6-8 and 10-13 have been rejected under 35 USC 102(b) as being anticipated by Leehey (US 2,926,623).

In order to properly anticipate Applicant's invention, as claimed, under 35 USC §102, each and every element of the claim in issue must be found, "either expressly or inherently described, in a single prior art reference." *Orthokinetics, Inc. v. Safety Travel Chairs, Inc.*, 1 USPQ2d 1081 (Fed. Cir. 1986); *see also verdegall Bros. V. Union Oil Co. of California*, 814 F2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The absence of one element in the claim in issue from the cited prior reference negates anticipation. *See Atlas Powder Co. v. E.I. du Pont de Nemours & Co.*, 224 USPQ2d 409 (Fed Cir. 1984). Anticipation was intended to apply in this limited situation in which one prior art reference incorporates ***all*** of the elements of a claim in a subsequent invention because the nonobvious standard was intended to cover broader obvious leaps from a reference to a claim or from combined references to a claim. *See Titanium Metals Corp. v. Brenner*, 227 USPQ 773 (Fed. Cir. 1985).

4. 35 USC 103 Rejections.

Claims 4 and 5 have been rejected under 35 USC 103(a) as being unpatentable over Leehey in view of Warner et al. (US 4,345,538).

Claim 9 has been rejected under 35 USC 103(a) as being obvious over Leehey in view of Sachs (US 4,056,074).

For a claim to be determined obvious (or nonobvious) under 35 USC 103, the claimed material must have been obvious to person of ordinary skill in the art from the prior art. An obviousness determination requires examining (1) the scope of the prior art, (2) the level of skill in the art, and (3) the differences between the prior art and Applicant's invention. *Litton Systems, Inc. v. Honeywell, Inc.*, 117 SCt 1270 (1970). A mere suggestion to further experiment with disclosed principles would not render obvious an invention based on those principles. *Uniroyal, Inc. v. Rudkin-Wiley Corp.*, 19 USPQ2d 1432 (Fed. Cir. 1991). In fact, an applicant may use a reference as his basis for further experimentation and to create his invention. *Id.*

The fact that each element in a claimed invention is old or unpatentable does not determine the nonobviousness of the claimed invention as a whole. *See Custom Accessories, Inc., v. Jeffrey-Allan Industries*, 1 USPQ2d 1196 1986 (Fed. Cir. 1986). The prior art must not be given an overly broad reading, but should be read in the context of the patent specifications and ***as intended by reference authors***. *Durling v. Spectrum Furniture Co.*, 40 USPQ2d 1788 (Fed Cir 1996) (Federal Circuit held that district court erred by giving a "too broad an interpretation" of claims in a sofa patent to invalidate another on the nonobviousness standard).

The Federal Circuit has made it clear that the nonobviousness standard is applied wrongly if a court or an examiner: (1) improperly focuses on "a combination of old elements" rather than the invention as a whole; (2) ignores objective evidence of nonobviousness; (3) pays lip service to the presumption of validity; and (4) fails to make sufficient *Graham* findings. *Custom Accessories, Inc.*, 1 USPQ2d 1196 (Fed. Cir. 1986). Applying the nonobviousness test counter to these principles counters the principle that a patent application is presumed nonobvious. *Id.* To establish a *prima facie* case of obviousness, the prior art reference (or references when combined) must teach or suggest all the claim limitations. MPEP §2143.

5. Response to Rejections

Applicant respectfully traverses the rejections. Leehey, Warner and Sachs relate to hydrofoils i.e., watercrafts that have at last two foils mounted below the hull, respectively, at the bow and at the stern, that beyond a certain speed lift the watercraft completely out of the water. Therefore, in hydrofoils the foils hold all the watercraft weight and not allow the hull to float. In all the cases disclosed hydrofoils have the hull completely out of water during navigation. These watercrafts have the drawback that they become unstable at high speed. Further, in case of rough seas the hull can be slapped by the waves.

In comparison, planing and semi-planing boats, such as those adapted for the present invention have, instead, a substantial part of the hull in the water. The drawbacks are that the boats pitch intensely. In addition, the fraction of hull immersed in water cannot be reduced beyond a certain limit, causing higher fuel consumption.

The technical problem is to provide a simple foil structure to reduce pitching in case of rough sea, limit fuel consumption and to allow high speed by reducing the fraction of hull immersed in water in planing and semi-planing boats, with a correct planing angle.

This problem is solved by the present invention having a surprising effect. With a single transversal foil (with variations as described in the specification), arranged substantially at the barycenter, a high lifting contribution is given to the watercraft, reducing the fraction of hull immersed in water, and having a stabilising effect in case of rough sea and high speed. The strong lifting force, being concentrated on only one transversal foil at the barycenter, is not enough to fully lift the watercraft, like in hydrofoils. Instead, the strong lifting force, concentrated at the barycenter, shifts backwards and reduces the fraction of hull immersed in water, thus achieving the sought objects.

In fact, strong lifting forces are applied only in hydrofoils, having bow and stern foils. Instead, in planing and semi-planing boats a large front or rear foil alone would only affect seriously the trim angle and would be disadvantageous.

According to the invention a large lifting foil at the barycenter allows the foil to bear a large part of the weight of the watercraft, substantially reducing the fraction of hull immersed in water. The main advantage of this solution is to reduce water resistance during navigation sustaining part of watercraft weight without preventing its hull to float. The foils structure disclosed move less water with respect to those mounted on hydrofoils avoiding the hull to be tossed by the waves.

Leehey discloses a hydrofoil craft having three foils—one each at the bow, middle and stern area. The middle foil is configured as a horizontal surface, not as a V-shaped surface. The middle foil is placed at the "center of gravity." Leehey requires three foils. See column 3, lines 3-4 ("In accordance with this invention, three hydrofoils 20, 22, and 24 are mounted in tandem..."). Claim 1 of Leehey requires a "plurality of hydrofoils" (column 4, lines 25-26). Leehey is limited to a plurality of foils in order for his invention to function. The present invention is not anticipated by Leehey because the present invention uses only a single foil at the barycenter.

Sachs shows a hydrofoil kit having a plurality of foils, one at the engine area and a pair of foils amidship. The pair of amidship foils, as shown in Figs. 2 and 7, are placed outside of the line of the gunwale. The "barycenter," as used in the present invention, is the center of mass of the ship, whereas "amidship," as used in Sachs is the geographic point midway between the bow and the stern. The two points are different with respect to the placement of the foil and the results obtained from the different placement. Again, as with Leehey, at least one foil at the stern and one toward the bow or amidship is required for Sachs' invention to function. Sachs does not disclose, teach or suggest a single foil at the barycenter to achieve the stated result. As such, the placement described by Sachs does not render the present invention obvious.

Additionally, the Examiner has not cited or stated any motivation or suggestion in the art to combine the three foil center gravity design of Leehey with the three foil (with two) amidship design of Sachs to achieve the result of the instant invention. Therefore, the combination of Leehey and Sachs does not render the present invention obvious.

Warner discloses a hydrofoil (not a planning or semi-planing) vessel having a substantially flat (i.e., not V-shaped) bow foil and a similarly shaped stern foil. There is no discussion of the use of a single foil at the barycenter. As discussed above, there is no suggestion or motivation to modify the foil shape, location or number of foils in Warner alone or Warner in combination with Leehey to achieve the present invention as claimed and thus the present invention is not rendered obvious.

CONCLUSION

Applicant submits that the patent application is in proper condition for allowance, and respectfully requests such action. If the Commissioner or the Examiner has any questions that can be resolved over the telephone, please contact the below signed patent attorney of record.

Respectfully submitted,
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